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EXAMINER	
PAUL, DISLER	

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2614	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/786,494	OPITZ, MARTIN	
	Examiner	Art Unit	
	DISLER PAUL	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 7-9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter such as "*a separate test device including the loudspeaker and the electronic circuit connected to the signal processor and either the microphones or digital filters located in there site of intended use'* which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Response to argument

The applicant's argument in regard to independent claims (1-2; 5) wherein "the loudspeaker is emitting a predetermined periodic noise signal" has been further considered and such argument is persuasive.

However, such claim limitation has been further rejected over new prior art.

Similarly, the applicant's amended claim wherein the "signal processor is configured to compare the response signals with model signals stored in memory" have been analyzed and is rejected over new prior art.

Relevant prior arts

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tashev et al. (US 7,515721) also disclose of such concept of having *an array microphone comprising: a plurality of several individual microphones located in their site of intended use, the microphones connected to a signal processor and each individual microphone configured for operating, in particular for voice recognition; at least one loudspeaker arranged in an acquisition range of each of the individual microphones; an electronic circuit configured to apply a signal to the loudspeaker to emit a predetermined noise signal; the signal processor configured to evaluate the response signals received from each of the microphones as a response to the reception of the periodic noise signal; the signal processor is-configured to compare the response signals with model signals stored in memory or externally of the signal processor*.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1; 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pla et al. (5,402,669) and Kataoka (US 2002/0181723 A1) and Craven et al. (US 6,760,451 B1) and Arndt (US 6,954,535).

Re claim 1, Pla et al. disclose of an Array microphone comprising: a plurality of individual microphones located in their site of intended use (fig.2 (38, 40); col.3 line 49-52/individual microphones located in the housing as site of intended used); the microphones connected to a signal processor having at least one digital filter for each individual microphone (fig.2 (58, 60), col.4 line 7-12; col.7 line 5-15/the digital filter for each microphone as part of the signal processor).

However, Pla et al. never specify of the microphone configured for operating for voice recognition. But, Kataoka disclose of a system wherein the similar concept of having microphones configured for operating for voice recognition (fig.1 (1); par [0006, 0017]) so as to control the machine to move naturally upon its motion based on human voice. Thus, it would have been obvious for one of the ordinary skill in the art to have modified Pla et al. with incorporating the microphone configured for operating for voice recognition so as to

control the machine to move naturally upon its motion based on human voice.

The combined teaching of Pla et al. and Kataoka as a whole, further disclose of at least one loudspeaker is provided, which is arranged in the acquisition range of each of the individual microphones (fig.2(20); col.3 lines 35-40)), an electronic circuit configured to apply signal to the loudspeaker to emit a predetermined noise signal (fig.2 wt (24,26), col.3 line 5-10; col.3 line 1-10; col.3 line 35-40; col.2 line 50-53/to emit pure tone signal and thus infer predetermined of the noise signal).

However, the combined teaching of Pla et al. and Kataoka as a whole, never specify of the noise signal as being a periodic noise signal. But, Craven disclose of a signal wherein the loudspeaker emits the noise signal as being a periodic noise signal (fig.2 (8 , 1); fig.22e ; col.26 line 47-60; col.27 line 55-67) so as determine the average value in determining the impulse response of the test signal from the speaker to the microphone. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the prior arts with incorporating the noise signal as being a periodic noise signal so as determine the average value in determining the impulse response of the test signal from the speaker to the microphone.

The combined teaching of Pla et al. and Kataoka and Craven et al. as a whole, further disclose of the signal processor configured to evaluate the response signals received from each of the microphones as a response to the reception of the periodic noise signal (fig.2 (58, 60); col.4 line 20-55; col.7 line 1-15/processor to evaluate as response signal from each microphone and to match with the adaptive filter).

But, the combined teaching of Pla et al. and Kataoka and Craven et al. as a whole, never specify of the signal processor is configured to compare the response signals with model signals stored in memory.

But, Arndt et al. disclose of the similar system wherein the signal processor is configured to compare the response signals with model signals stored in memory (fig.2 (4-5; 9,17,20); col.3 line 55-67; col.4 line 1-20) so that the filter can be adapted to different hearing situation. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the combination with incorporating the signal processor is configured to compare the response signals with model signals stored in memory so that the filter can be adapted to different hearing situation.

Re claim 7, the array microphone of claim 1 further comprising: a device including the loudspeaker and the electronic circuit connected to the signal processor and the microphone or digital filter in their

site of intended use (fig.2/all component in the same housing including microphone in their particular site of intended used within the housing).

But, the combined teaching of Pla et al. and Kataoka and Craven et al. and Arndt as a whole, never disclose of such device as being a separate test device including the loudspeaker and the electronic circuit connected to the signal processor and either the microphones or digital filters located in there site of intended use. But, Arndt disclose of such similar concept of having a separate test device including the loudspeaker and the electronic circuit connected to the signal processor and either the microphones or digital filters located in there site of intended use (fig.1 [{11-14,9,15}; {1}] ; col.3 line 18-30/microphone and filter in their particular housing with respect to speaker and processor) so as perform test in improving the directivity characteristic of the device. thus, it would have been obvious for one of the ordinary skill in the art to have modified the combination with incorporating the separate test device including the loudspeaker and the electronic circuit connected to the signal processor and either the microphones or digital filters located in there site of intended use so as perform test in improving the directivity characteristic of the device.

Similarly Re claims 8-9 which cite the similar claim limitation as in claim 7 has been analyzed and rejected accordingly.

Re claim 10, A test device for testing an array microphone having several individual microphones located in their site of intended use, the microphones connected to a signal processor that comprises at least one digital filter for each individual microphone, in particular for voice recognition, the test device comprising: at least one loudspeaker arranged in an acquisition range of each of the individual microphones; an electronic circuit configured to apply a signal to the loudspeaker to emit a predetermined periodic noise signal; where the signal processor is configured to evaluate the response signals coming from each of the microphones as a response to the reception of the periodic noise signal; and where the signal processor is configured to compare the response signals with model signals stored in the signal processor or externally (see claim 1 rejection analysis).

Re claim 11, Pla et al. disclose of a test device for testing an array microphone having several individual microphones located in their site of intended use, the microphones connected to at least one digital filter for each individual microphone, the test device comprising: a signal processor; at least one loudspeaker arranged in an acquisition range of each of the individual microphones and an electronic circuit configured to apply a signal to the loudspeaker to emit a predetermined noise signal (fig.2; device with processor and speaker and individual microphone and filter per each microphone).

However, Pla et al. never specify of the noise signal as being a periodic noise signal. But, Craven disclose of a signal wherein the loudspeaker emits the noise signal as being a periodic noise signal (fig.2 (8 , 1); fig.22e ; col.26 line 47-60; col.27 line 55-67) so as determine the average value in determining the impulse response of the test signal from the speaker to the microphone. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the prior arts with incorporating the noise signal as being a periodic noise signal so as determine the average value in determining the impulse response of the test signal from the speaker to the microphone.

However, the combined teaching of Pla et al. and Craven as a whole, never specify of the microphone configured for operating for voice recognition. But, Kataoka disclose of a system wherein the similar concept of having microphones configured for operating for voice recognition (fig.1 (11); par [0006, 0017]) so as to control the machine to move naturally upon its motion based on human voice. Thus, it would have been obvious for one of the ordinary skill in the art to have modified Pla et al. with incorporating the microphone configured for operating for voice recognition so as to control the machine to move naturally upon its motion based on human voice.

The combined teaching of Pla et al. and Craven and Kataoka as a whole, further disclose of the signal processor is configured to evaluate the response signals coming from each of the microphones as a response to the reception of the periodic noise signal (fig.2 (58, 60); col.4 line 20-55; col.7 line 1-15/processor to evaluate as response signal from each microphone and to match with the adaptive filter).

The combined teaching of Pla et al. and Craven and Kataoka as a whole, fail to disclose of the signal processor is configured to compare the response signals with model signals stored in the signal processor or externally.

But, Arndt et al. disclose of the similar system wherein the signal processor is configured to compare the response signals with model signals stored in the signal processor or externally (fig.2 (4-5; 9,17,20); col.3 line 55-67; col.4 line 1-20) so that the filter can be adapted to different hearing situation. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the combination with incorporating the signal processor is configured to compare the response signals with model signals stored in the signal processor or externally
so that the filter can be adapted to different hearing situation.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pla et al. (5,402,669) and Craven et al. (US 6,760,451 B1) and Arndt (US 6,954,535).

Re claim 2, Pla et al. disclose the method for checking array microphones, the method comprising: emitting a predetermined noise signal via at least one loudspeaker (fig.2 wt (24,26), col.3 line 5-10; col.3 line 1-10; col.3 line 35-40; col.2 line 50-53/to emit pure tone signal and thus infer predetermined of the noise signal).

However, Pla et al. never specify of the noise signal as being a periodic noise signal. But, Craven disclose of a signal wherein the loudspeaker emits the noise signal as being a periodic noise signal (fig.2 (8,1); fig.22e ; col.26 line 47-60; col.27 line 55-67) so as determine the average value in determining the impulse response of the test signal from the speaker to the microphone. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the prior arts with incorporating the noise signal as being a periodic noise signal so as determine the average value in determining the impulse response of the test signal from the speaker to the microphone.

The combined teaching of Pla et al. and Craven as a whole, further disclose of receiving the predetermined periodic noise signal

at a plurality of individual microphones (fig.2 (38,40); col.3 line 54-60) and evaluating at least one response signals from each microphone from each of a digital filter for each of the microphones (fig.2 (58, 60), col.4 line 7-12; col.7 line 5-15/the digital filter for each microphone as part of the signal processor).

But, the combined teaching of Pla et al. and Craven et al. as a whole, never specify of such comparing the at least response signal with at least one model signal stored in memory.

But, Arndt et al. disclose of the similar system wherein comparing the at least response signal with at least one model signal stored in memory (fig.2 (4-5; 9, 17, 20); col.3 line 55-67; col.4 line 1-20) so that the filter can be adapted to different hearing situation. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the combination with incorporating the comparing the at least response signal with at least one model signal stored in memory so that the filter can be adapted to different hearing situation.

The combined teaching of Pla et al. and Craven et al. and Arndt as a whole, further disclose of the at least one model signal corresponding to properly operating individual microphones or properly operating filter (fig.2 (9,21); col.4 line 15-21; col. 2 line 50-60/filter operating characteristics).

The combined teaching of Pla et al. and Craven et al. and Arndt as a whole, further disclose of such providing a display in the form of a message or storing the comparison result (fig.2 (9,21); to store the comparison result).

Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pla et al. (5,402,669) and Craven et al. (US 6,760,451 B1) and Arndt (US 6,954,535).and further in view of Shuttleworth (2002/0071568 A1) and Flentje (US 2002/0048379 A1).

Re claim 3, the method of claim 2, with the loudspeaker emitting a predetermined periodic signal , However, the combined teaching of Pla et al. and Craven et al. and Arndt as a whole, fail to specifically disclose of before emitting the predetermined periodic noise signal via the loudspeaker, verifying the loudspeaker by applying the loudspeaker signal directly to an A/D converter and operating the loudspeaker in parallel to an input impedance of the A/D converter , the loudspeaker forming a voltage divider with an output resistance of an output amplifier that operate the loudspeaker and recording the signal applied to the A/D converter and evaluating the

signal by comparing this signal with a reference signal that originates from a measurement with a reference impedance instead of the loudspeaker impedance.

However, Shutttleworth disclose of a monitoring impedance speaker wherein the similar concept of having the verification is carried out before emitting the noise signal via a loudspeaker, and where the loudspeaker signal is directly applied to a digital processor and further of having the signal is recorded and evaluated by comparing this signal with a reference signal that originates from a measurement with a reference impedance instead of the loudspeaker impedance (fig.1-2 (12); page 1[0008-9; page 2[0017]) for the purpose of performing self-diagnostic test in ensuring the audio system is working properly. Thus, it would have been obvious for one of the ordinary skill in the art to have incorporated such concept of before emitting the noise signal via the loudspeaker, and where the loudspeaker signal is directly applied to the digital processor (inherent having such A/D converter wherein original analog signal being processed by a digital processor) and further of having the signal is recorded and evaluated by comparing this signal with a reference signal that originates from a measurement with a reference impedance instead of the loudspeaker impedance for the purpose of performing self-diagnostic test in ensuring the audio system is working properly.

However, the prior art of record fail to disclose of the configuration of the system wherein the loudspeaker forming a voltage divider with the output resistance of an output amplifier which operates the loudspeaker.

However, Flentje disclose a system wherein the similar concept of having the configuration of the system wherein the loudspeaker forming a voltage divider with the output resistance of an output amplifier which operates the loudspeaker (fig.2 (20, 24, 18); page 3[0033]) for the purpose of enabling the device to consummate unnecessary electrical energy and thus maintaining the harmonic distortions and dynamic response of the signal at constant quality. Thus, it would have been obvious for one of the ordinary skill in the art to have incorporated the loudspeaker forming a voltage divider with the output resistance of an output amplifier which operates the loudspeaker for the purpose of enabling the device to consummate unnecessary electrical energy and thus maintaining the harmonic distortions and dynamic response of the signal at constant quality.

However, the prior art of record fail to disclose of the having the loudspeaker operating in parallel to the impedance of the A/D converter. However, it is noted having such loudspeaker operating in parallel to the impedance of the A/D converter is merely an obvious

variation of the engineering design with no unexpected result in generating the audio signal, thus it would have been obvious for one for one of the ordinary skill in the art to have modified the prior art of records in incorporating the having the loudspeaker operating in parallel to the impedance of the A/D converter for generating predetermined periodic signal sounds.

Re claim 4, the method according to claim 3, characterized in that the ratio of the loudspeaker impedance to the input impedance of the A/D converter is verified and, However, the combined teaching of Pla et al. and Craven and Arndt and Shutttleworth and Flentje as a whole, failed to disclose of such verifying a ratio of the loudspeaker to the input impedance of the A/D converter and adding an additional pre-resistance if the ratio is substantially greater than or substantially less than 1.

But, it is noted it would have been obvious for one of the ordinary skill in the art to have substituted the impedance of the device and loudspeaker as disclose with such a ratio of the loudspeaker to the input impedance of the A/D converter and adding an additional pre-resistance if the ratio is substantially greater than or substantially less than 1 with no unexpected result so as to

similarly performing self-diagnostic test in ensuring the audio system is working properly.

5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable Pla et al. (5,402,669) and Craven et al. (US 6,760,451 B1) and Arndt (US 6,954,535) and official notice.

Re claim 5, Pla et al. disclose of a method for automatically calibrating array microphone having a plurality of individual microphones connected to a signal processor having at least one digital filter for each individual microphone(fig.2); the method comprising: emitting a predetermined noise signal via a loudspeaker in the acquisition range of each individual microphone(fig.2 (20), col.3 line 5-10; col.3 line 1-10; col.3 line 35-40; col.2 line 50-53/to emit pure tone signal and thus infer predetermined of the noise signal).

However, Pla et al. never specify of the noise signal as being a periodic noise signal. But, Craven disclose of a signal wherein the loudspeaker emits the noise signal as being a periodic noise signal (fig.2 (8 , 1); fig.22e ; col.26 line 47-60; col.27 line 55-67) so as determine the average value in determining the impulse response of the test signal from the speaker to the microphone. Thus, it would have been obvious for one of the ordinary skill in the art to have modified

the prior arts with incorporating the noise signal as being a periodic noise signal so as determine the average value in determining the impulse response of the test signal from the speaker to the microphone.

The combined teaching of Pla et al. and Craven as whole, further disclose of such evaluating the response signals from each microphone and comparing (fig.2 (58, 60); col.4 line 20-55; col.7 line 1-15/processor to evaluate as response signal from each microphone and to match with the adaptive filter).

But, the combined teaching of Pla et al. and Craven et al. as a whole, never specify of the comparing the response signals with model signals stored in memory.

But, Arndt et al. disclose of the similar system wherein the comparing the response signals with model signals stored in memory (fig.2 (4-5; 9,17,20); col.3 line 55-67; col.4 line 1-20) so that the filter can be adapted to different hearing situation. Thus, it would have been obvious for one of the ordinary skill in the art to have modified the combination with incorporating the comparing the response signals with model signals stored in memory so that the filter can be adapted to different hearing situation.

The combined teaching of Pla et al. and Craven et al. and Arndt as a whole, further disclose of the model signals corresponding to properly operating individual microphones or properly operating digital filters (fig.2 (4-5; 9,21); col.2 lien 50-60; col.3 line 35-50) and changing the value of any of the individual filter coefficients or of all the filter coefficients of the filter coefficient set as a function of the deviation of the response signals from the model signals (fig.2 (21,4-5); col.4 line 1-20).

While, the combined teaching of Pla et al. and Craven et al. and Arndt as a whole, disclose of testing and adjusting the filter having response signal to be at a certain range as desired (Pla, fig.2; perform test and adjust the filter response).

But, the prior art never specify of such repeating the test until the response signals are in the range of the model signals. But, it would have been obvious for one to have tried in having such test to be further as in repeating the test until the response signals are in the range of the model signals with no unexpected result so as to similarly adjust the filter response as desired for achieving the desired calibrated microphones signal.

The combined teaching of Pla et al. and Craven et al. and Arndt as a whole, failed to disclose of increasing the sound concentration of the array microphone and suppresses lateral sound sources by processing

the individual microphone signals, using an algorithm component that include filter coefficient sets used in the digital filters characteristic of the microphone arrangement, microphone type, microphone sensitivity, and characteristics of the acoustical environment and the location of the sound sources.

But, official notice is taken it is well known in the art as evidenced by Tashev et al. (fig.3 (350,340); col.8 line 60-67; col.11 line 35-48; col.15 line 1-14/beamforming with noise cancellation in increasing the sound array concentration and suppress other signal using such parametric array microphone) that increasing the sound concentration of the array microphone and suppresses lateral sound sources by processing the individual microphone signals, using an algorithm component that include filter coefficient sets used in the digital filters characteristic of the microphone arrangement, microphone type, microphone sensitivity, and characteristics of the acoustical environment and the location of the sound sources in improving overall quality of captured sound with respect to person speaking.

Thus, it would have been obvious for one of the ordinary skill in the art to have modified the prior art with incorporating the sound concentration of the array microphone and suppresses lateral sound sources by processing the individual microphone signals, using an algorithm component that include filter coefficient sets used in the digital filters characteristic of the microphone arrangement,

microphone type, microphone sensitivity, and characteristics of the acoustical environment and the location of the sound sources in improving overall quality of captured sound with respect to person speaking.

Re claim 6, the method according to claim 5, However, prior art of record fail to disclose of interrupting the test after a predetermined number of test repetitions have been carried. But, it is noted it would have been obvious for one of the ordinary skill in the art to have interrupting the test after a predetermined number of test repetitions have been carried out based on the designer's preference with no unexpected result so as to analyzed the microphones response.

The combined teaching of Pla et al. and Craven et al. and Arndt as a whole, fail to disclose of such displaying or storing an error message. But, official notice is taken the concept of displaying or storing an error message is well known in the art, thus, it would have been obvious for one of the ordinary skill in the art to have incorporated such displaying or storing an error message for visually outputting the result to the user.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Disler Paul whose telephone number is 571-270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. P./
Examiner, Art Unit 2614

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2614